Heliogen

Second Quarter 2022

Earnings Presentation



REPLACING FOSSIL FUELS WITH CONCENTRATED SUNLIGHT

Heliogen

Disclaimer

Forward-Looking Statements

This presentation contains certain forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended. Statements that are not historical in nature, including the words “anticipate,” “expect,” “suggests,” “plan,” “believe,” “intend,” “estimates,” “targets,” “projects,” “should,” “could,” “would,” “may,” “will,” “forecast” or the negative version of those words and other similar expressions are intended to identify forward-looking statements. These forward-looking statements include, but are not limited to, statements regarding the Company’s projected financial information and guidance, commercial strategy and progress, market growth, potential additional public-sector funding and reaching key milestones. Forward-looking statements are predictions, projections and other statements about future events that are based on current expectations and assumptions and, as a result, are subject to risks and uncertainties, many of which are beyond our ability to control or predict. Although we believe that the expectations reflected in these forward-looking statements are reasonable as of the date made, such forward- looking statements are not guarantees of future performance. Many factors could cause actual future events to differ materially from the forward-looking statements in this presentation, including but not limited to: (i) our financial and business performance, including risk of uncertainty in our financial projections and business metrics and any underlying assumptions thereunder; (ii) our ability to execute our business model, including market acceptance of our planned products and services and achieving sufficient production volumes at acceptable quality levels and prices; (iii) our ability to access sources of capital to finance operations, growth and future capital requirements; (iv) our ability to maintain and enhance our products and brand, and to attract and retain customers; (v) our ability to scale in a cost effective manner; (vi) changes in applicable laws or regulations; (vii) the ongoing impacts of the COVID-19 pandemic and the potential impacts of Russia’s invasion of Ukraine on our business; (viii) developments and projections relating to our competitors and industry; (ix) our ability to access sources of capital to finance operations, growth and future capital requirements; and (x) our ability to protect our intellectual property. You should carefully consider the foregoing factors and the other risks and uncertainties disclosed in the “Risk Factors” section in Part I, Item 1A in the Company’s Annual Report on Form 10-K/A for the annual period ended December 31, 2021 and other documents filed by the Company from time to time with the Securities and Exchange Commission. These filings identify and address other important risks and uncertainties that could cause actual events and results to differ materially from those contained in the forward-looking statements. Any forward-looking statements speak only as of the date they are made and the Company assumes no obligation and does not intend to update or revise these forward-looking statements, whether as a result of new information, future events, or otherwise.

Heliogen Second Quarter 2022 Earnings Call Agenda

- Business Overview
- Execution Progress
- Review of Second Quarter Events
- Commercial Agreement Update
- Guidance and Financial Update

The Heliogen Opportunity and Approach

The Opportunity

- Heavy industry is a critical market for decarbonizing technologies and is currently underserved
- Renewable energy for heavy industry must be near constantly available and cost effective

Our Technology-Focused Approach

- Provides clean thermal energy which can be used to make steam, electric power, or green hydrogen
- AI + software + computing power can simplify and reduce hardware, installation, and maintenance costs
- High-volume, modular manufacturing techniques will enable reliability, scale and learning curve cost reductions

Second Quarter 2022 and Subsequent Highlights

Second Quarter 2022 Highlights

- Finalized and executed exclusive lease with BLM in Brenda Solar Energy Zone
- Announced partnership with Hanwha Power Systems for production of supercritical CO_2 (sCO_2) power block to be initially deployed for Woodside project
- Rapid prototyping capabilities and pilot production lines operational at Long Beach Facility

Subsequent 2022 Highlights

- Entered into a letter of intent with Dimensional Energy for the production of sustainable aviation fuel
- Completed installation of fourth generation heliostats at Heliogen's Lancaster demonstration facility
- Began testing of autonomous cleaning vehicle to be used at first commercial-scale project

Key Commercial and Execution Milestones in 2022

Area	Milestone	Expected Timing	Status
Commercial	First module contracted	1H 2022	Complete
	Second module contracted (third module = stretch target)	2H 2022	---
Execution	First groundbreaking	2H 2022	---
	Assembly line heliostat production	2H 2022	---
	Key supply chain partners announced	2H 2022	Ongoing
	Testing of cleaning functionality for autonomous robots	2H 2022	Ongoing

Heliogen's Heliostat Evolution: Instrumental in Cost Reduction Efforts

Gen 1

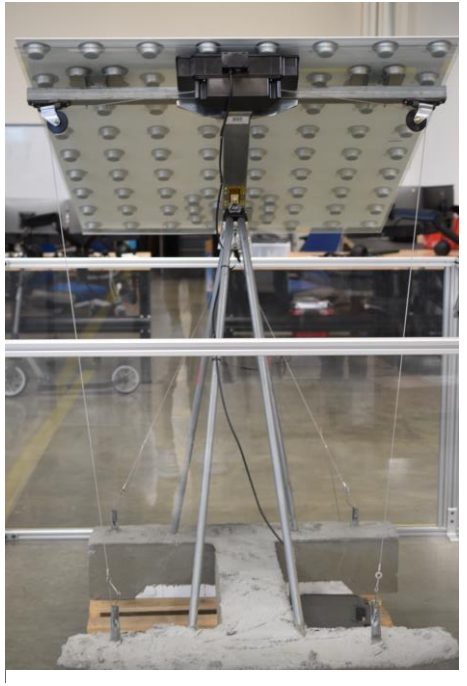


Gen 2



Gen 3





Gen 4
(Current)

Fourth Generation Heliostats Installed and Operational at Lancaster Facility

Heliogen set a new installation record of two minutes per heliostat, demonstrating progress on cost-reduction efforts



First implementation of wireless power and control using Heliogen's tracker hardware and software



Fourth generation heliostats installed in radial pattern like future commercial-scale designs

Testing of Customer's Autonomous Cleaning Vehicle Is Underway

Designed and built entirely in-house using LIDAR, cameras, GPS and Heliogen's proprietary software

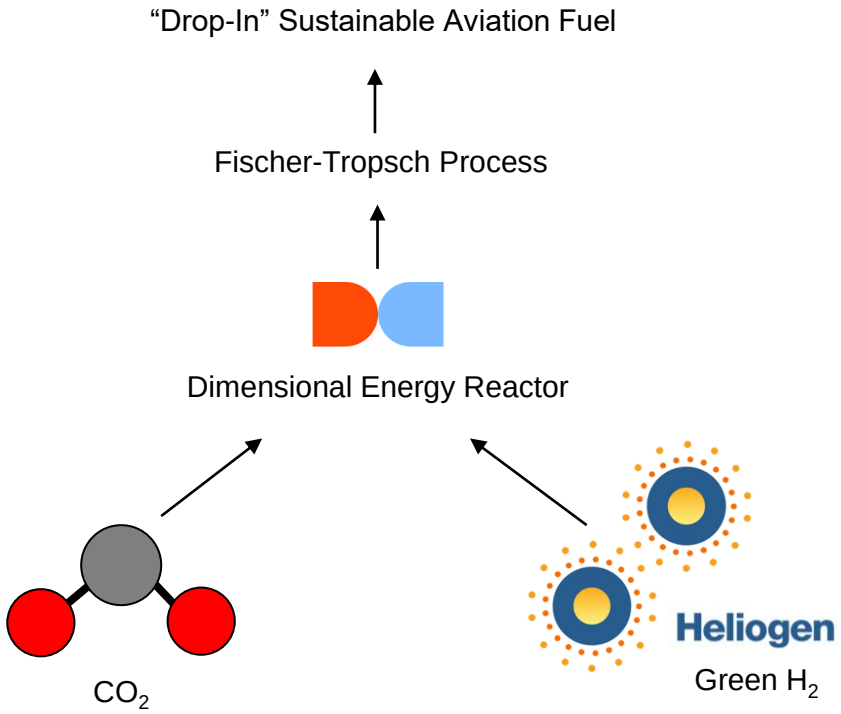




Dimensional Energy Partnership to Produce Sustainable Aviation Fuel

- Heliogen entered into a non-binding letter of intent (LOI) to partner with Dimensional Energy to jointly produce sustainable aviation fuel (SAF) at Heliogen's concentrated solar thermal demonstration facility in Lancaster, Calif.
- Both companies will work to deploy HelioHeat technology to convert sunlight directly into thermal energy in the form of high temperature steam and air that will be used to produce green hydrogen for Dimensional Energy's Reactor platform
- Green hydrogen and CO_2, are the main feedstocks for Dimensional's Energy Reactor platform
- Goal is to build a fully integrated ~1 barrel per day drop-in ready SAF demonstration.
- We expect the demonstration project to be a first step to develop a pipeline for approximately 3 million barrels of fuel over the next ten years.
- Heliogen is also to provide siting and engineering support to the project

Simplified Dimensional Reactor Process



Guidance and Financial Update

Key 2022 Performance Metrics		
Primary Metric	**Modules Contracted**	**2 – 3**
Secondary Metric	**Revenue**	**$20 – $25 million**

Second Quarter 2022 Financial Highlights		
($ in millions)	**2Q 2022**	**1H 2022**
Revenue	$2.4	$5.9
R&D	$6.1	$15.8
SG&A	$22.6	$43.0

Financial Highlights

- Reaffirmed 2022 guidance
- Second quarter revenue of $2.4 million in-line with full-year 2022 internal expectations
  - Back half-weighted revenue expected
- One module contracted; additional discussions ongoing
- Multiple sources of potential additional public-sector funding available
- Inflation Reduction Act expected to provide meaningful tailwinds for Heliogen and its prospective customers

Heliogen's Advantages

- **Differentiated Product**: The only public solar technology company focused on decarbonizing industrial energy production
- **Cutting-edge Software Makes It Work:** Utilizes artificial intelligence, software and cost-effective computation power to simplify and reduce hardware production, installation and maintenance costs and to generate more energy
- **Durable Competitive Advantages:** Extensive patent portfolio, trade secrets and learnings enable Heliogen to maintain and defend its competitive advantages
- **Large and Growing Market:** Forecast capex investment of ~$8.5 trillion for renewable energy and >$150 billion for hydrogen by 2030
- **Vertical Integration:** Allows utilization of Heliogen's AI across entire value chain to reduce costs
- **The Right Management Team:** Expertise in technology, financial management, EPC, manufacturing and solar design and sales well-suited to Heliogen's needs

Heliogen has the potential to profitably transform the world's energy production and meaningfully address climate change

Heliogen

Appendix

How Our Patented Innovations Make A Huge Difference

- We can achieve higher temperature heat
  Higher temperatures up to 1000°C means ability to enable broader industrial applications, higher capacity factors, and lower-cost storage
- We need less frequent calibration AND are more precise
  Closed-loop AI + computer vision control means there is NO temporary pre-calibration – our units are continuously calibrated
- We can use fewer materials – more bytes and fewer atoms
  Use software instead of steel to achieve accuracy and efficiency
- We can use less manual labor
  Heliostat can be made in factory instead of in the field, with potential for autonomous maintenance and installation

Heliogen

Heliogen's AI-driven technology is designed to capture, concentrate and refine sunlight into **cost-efficient energy on demand**.

This low-carbon energy can be available as heat, power, or hydrogen fuel in modular deployments.

HelioHeat

HelioHeat™ provides heat of up to 1000°C to power industrial processes or mining.



~ 1 mile →

Delivery range approximately 1 mile

HelioPower

HelioPower™ delivers the HelioHeat solar thermal energy to a heat engine to produce electrical power.

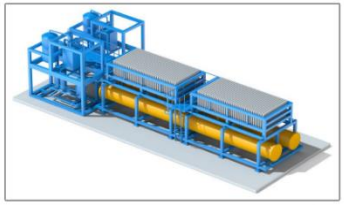


~ 100 miles →

Delivery range approximately 100 miles

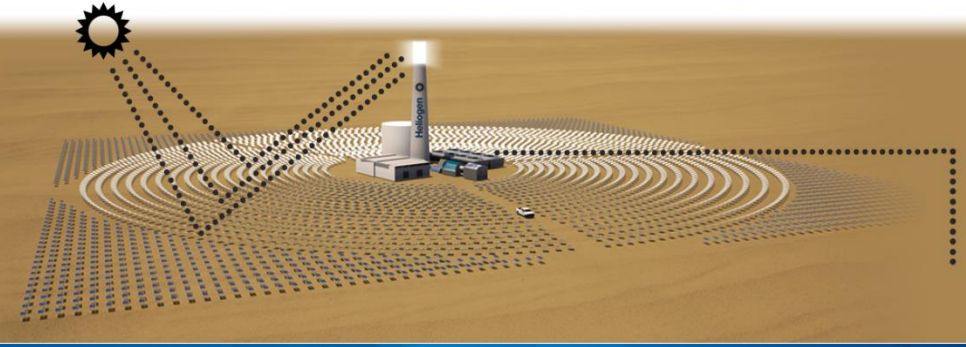
HelioFuel

HelioFuel™ systems couple a HelioPower plant with a large-scale water electrolyzer to produce green Hydrogen fuel.



> 10,000 miles →

Delivery range greater than 10,000 miles.



The collected sunlight is processed and converted to:

- HelioHeat
- HelioPower
- HelioFuel

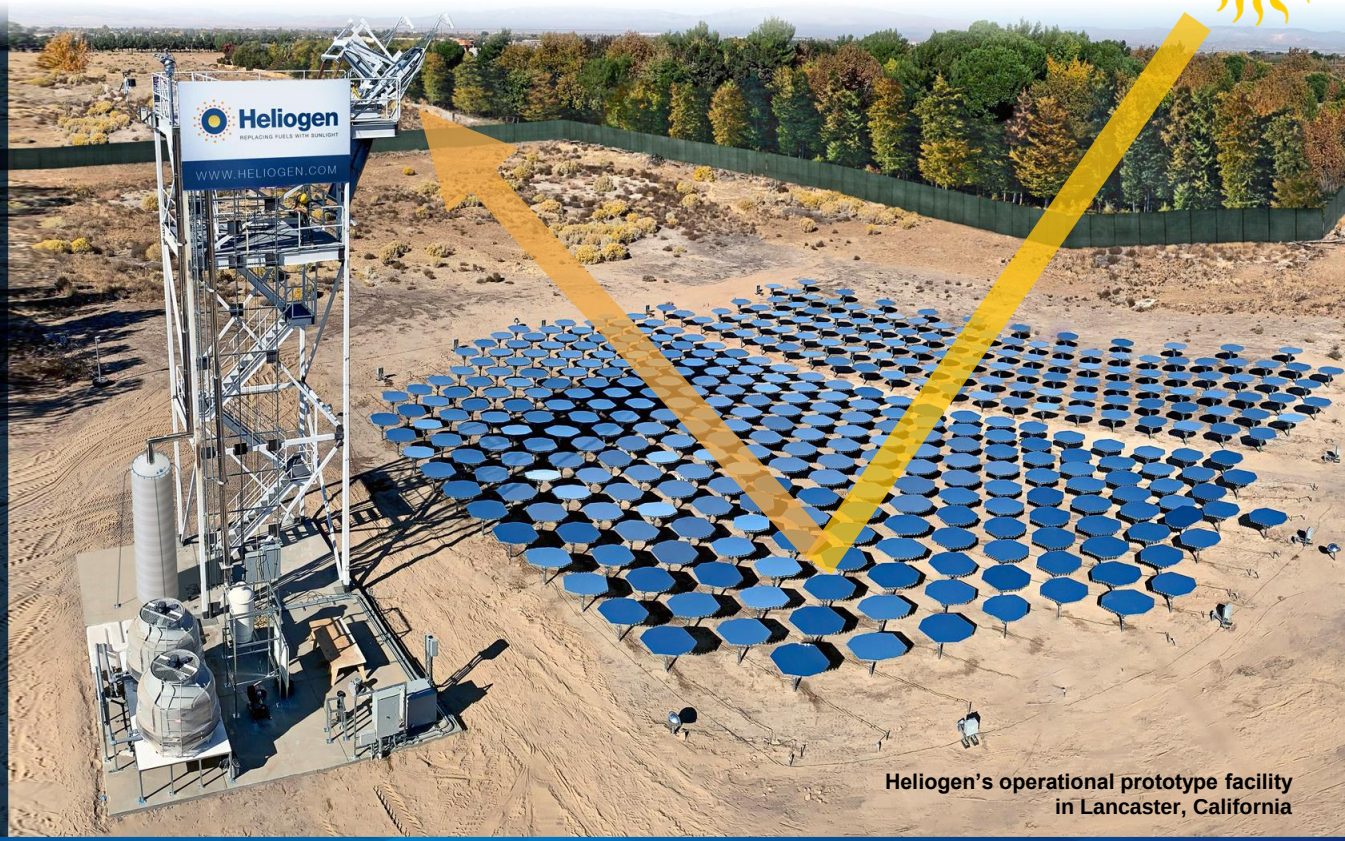
Heliogen aims to produce near always-available and transportable renewable energy – cost-effectively



The Heliogen Process

Heliogen's closed-loop system uses computer vision to identify the precise position of every single mirror, then make micro-adjustments in real time to achieve a perfect focus. Closed-loop means that the mirrors are pointed more accurately with optical feedback, not just mechanical stiffness

1. Reflect sun rays to top of tower
2. Generate high temperatures in solar receiver
3. Store heat in solid media
4. Heat exchanger brings heat to heat engine
5. Heat engine makes power
6. Optional electrolyzer makes Hydrogen



Heliogen's operational prototype facility in Lancaster, California

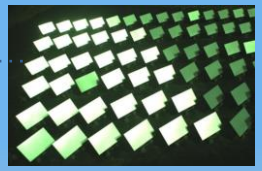
We believe our patented system is the first ever to achieve closed-loop tracking enabling cost-effective ultra-high temperatures at commercial scale



The sky is very bright next to the sun, and the intensity decreases further away

Sun & intensity gradient

4 cameras



Heliogen's Heliostat Operating System (H.O.S.)

The cameras measure the intensity of sky reflected in each mirror.

Using these four intensity measurements, we calculate the mirror orientation and therefore the direction of the beam, allowing real-time perfect tracking.

H.O.S. is the first commercial closed-loop heliostat field control system.